

FINAL

KITTITAS COUNTY REGIONAL SHORELINE MASTER PROGRAM UPDATE - SHORELINE RESTORATION PLAN

Ecology Grant No. 1200054

Kittitas County,
City of Cle Elum,
Town of South Cle Elum,
and City of Ellensburg
Shoreline Master Program Updates

Prepared for:

April 2014

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City of Cle Elum Department of Community Development,
Town of South Cle Elum, and City of Ellensburg Department of Community Development

Table of Contents

CHAPTER 1. Introduction	1-1
1.1 Plan Purpose and State Requirements.....	1-1
1.2 Defining Restoration	1-2
1.3 Key Elements of Restoration Planning in the SMP Update Process	1-2
1.4 Relationship to the Shoreline Inventory and Characterization Report	1-3
CHAPTER 2. Summary of Current Shoreline Conditions and Impairments.....	2-1
2.1 Yakima River Basin—Upper County Area	2-1
2.2 Yakima River Basin—Kittitas Valley Area.....	2-4
2.3 Yakima River Basin—Yakima Canyon Area.....	2-6
2.4 Little Naches River Basin	2-7
2.5 Columbia River.....	2-8
CHAPTER 3. Restoration Goals, Priorities, and Opportunities	3-1
3.1 Overall Goals and Priorities	3-1
3.1.1 Yakima River and Tributaries	3-1
3.1.2 Little Naches River and Tributaries	3-2
3.1.3 Columbia River.....	3-2
3.2 Matrices of Shoreline Restoration Opportunities.....	3-2
3.3 SMP Restoration Policies.....	3-14
CHAPTER 4. Implementing Restoration	4-1
4.1 Existing Restoration Programs.....	4-1
4.2 Potential Partners and Funding Sources.....	4-4
4.3 Timelines, Benchmarks, and Measuring Effectiveness.....	4-12
4.3.1 Restoration Timelines	4-14
CHAPTER 5. References	5-1
Appendix A. Example Shoreline Development Checklist.....	5-1

List of Tables

Table 1-1. WAC Requirements for Restoration Plans.....	1-3
Table 3-1. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Upper County Area	3-5
Table 3-2. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Kittitas Valley Area	3-8
Table 3-3. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Yakima Canyon Area.....	3-11
Table 3-4. Matrix of Shoreline Restoration Opportunities: Little Naches River Basin	3-12
Table 3-5. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Columbia River.....	3-13
Table 3-6. Matrix of Shoreline Restoration Opportunities: Programmatic Activities for all Streams and Waterbodies	3-13
Table 4-1. Suggested indicators of ecological function that can be systematically tallied using existing data for Kittitas County.....	4-13

List of Figures

Figure 2-1. Yakima River Basin “Upper County” shorelines.	2-1
Figure 2-2. Yakima River Basin “Kittitas Valley” shorelines.	2-5
Figure 2-3. Yakima River Basin “Yakima Canyon” shorelines.	2-7
Figure 2-4. “Little Naches River” shorelines.....	2-8
Figure 2-5. “Columbia River” shorelines.....	2-9

CHAPTER 1. INTRODUCTION

1.1 Plan Purpose and State Requirements

Kittitas County is undergoing a comprehensive update of its Shoreline Master Program (SMP) to improve protection of shoreline environments and ensure their continued use and enjoyment. In addition, the cities of Cle Elum and Ellensburg and the Town of South Cle Elum, which currently utilize the existing County SMP, are now in the process of developing their own jurisdiction-specific SMPs. The SMP updates are required by the Shoreline Management Act (SMA) of 1971 and the implementing rules known as the shoreline guidelines¹. In order to obtain the best value for limited State grant funds, Kittitas County and its municipalities are jointly updating their SMPs. As part of the update process, the County and its municipalities are required to develop a shoreline restoration plan.

The State has directed local governments to develop SMP provisions “...to achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program.” This overarching goal is accomplished primarily through two distinct objectives:

- **Protection** of existing shoreline functions through regulations and mitigation requirements to ensure “no net loss” of ecological functions from baseline environmental conditions; and
- **Restoration** of shoreline ecological functions that have been impaired from past development practices or alterations.

The concept of no net loss of shoreline ecological function is embedded in the SMA and in the goals, policies and governing principles of the shoreline guidelines. The State’s general policy goals for shorelines of the state include the “protection and restoration of ecological functions of shoreline natural resources.” This goal derives from the SMA, which states, “permitted uses in the shoreline shall be designed and conducted in a manner that minimizes insofar as practical, any resultant damage to the ecology and environment of the shoreline area.” The governing principles of the guidelines further clarify that protection of shoreline ecological functions is accomplished through the following (WAC 173-26-186):

- Meaningful understanding of the current shoreline ecological conditions;
- Regulations and mitigation standards that ensure that permitted developments do not cause a net loss of ecological functions;
- Regulations that ensure exempt developments in the aggregate do not result in net loss of ecological functions;

¹ Revised Code of Washington (RCW) 90.58 and Washington Administrative Code (WAC) 173-26, Part III.

- Goals and policies for restoring ecologically impaired shorelines;
- Regulations and programs that fairly allocate the burden of mitigating cumulative impacts among development opportunities; and
- Incentives or voluntary measures designed to restore and protect ecological functions.

The no net loss requirement also applies to critical areas (e.g., wetlands) within SMA jurisdiction, pursuant to the Growth Management Act (RCW 36.70A.480).

The restoration planning component of the SMP process is voluntary; there is no statutory requirement for specifically implementing a restoration plan. However, the restoration framework developed for these non-compensatory mitigation projects can also be applied to compensatory mitigation projects. In this way, all efforts to improve ecosystem functioning are coordinated, and will be designed to work together.

1.2 Defining Restoration

There are numerous definitions for “restoration” in scientific and regulatory publications. Specific elements of these definitions often differ, but the core element of repairing damage to an existing, degraded ecosystem remains consistent. In the SMP context, the WAC defines “restoration” or “ecological restoration” as:

“...the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions” (WAC 173-26-020(27)).

The emphasis in the WAC is to achieve overall improvement in existing shoreline processes or functions, if these functions are impaired. Therefore, the goal is not to restore historic conditions, but rather to improve on existing, degraded conditions. In this context, restoration can be implemented through a combination of programmatic measures (such as surface water management; water quality improvement; public education) and site-specific projects (such as culvert removal and/or riparian plantings). This restoration plan focuses on the County and its municipalities as a whole rather than parcel by parcel, or permit by permit.

1.3 Key Elements of Restoration Planning in the SMP Update Process

The State guidelines provide six key elements for shoreline restoration planning as part of a local jurisdiction’s master program, as outlined in WAC 173-26-201(2)(f). These elements are summarized below in Table 1-1, and provide the organization and content for this report.

Table 1-1. WAC Requirements for Restoration Plans

Key elements for the shoreline restoration planning process WAC 173-26-201(2)(f)	Where addressed in this report
Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.	Chapter 2 – Summary of Current Shoreline Conditions and Impairments
Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions.	Chapter 3 – Restoration Goals, Priorities, and Opportunities
Identify existing and ongoing projects and programs that are currently being implemented which are designed to contribute to local restoration goals.	Chapter 3 – Restoration Goals, Priorities, and Opportunities Chapter 4 – Implementing Restoration
Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals.	Chapter 4 – Implementing Restoration
Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals (e.g., monitoring of restoration project sites).	Chapter 4 – Implementing Restoration
Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs.	Chapter 3 – Restoration Goals, Priorities, and Opportunities Chapter 4 – Implementing Restoration

1.4 Relationship to the Shoreline Inventory and Characterization Report

One of the first phases of the SMP update process for the County and its municipalities was the development of a Shoreline Inventory and Characterization Report (ICR) (ESA, 2013). The ICR was developed in collaboration with Central Washington University’s Center for Spatial Information and Research, and was reviewed by Ecology and the SMP Technical Advisory Committee, which included representatives from the Yakama Nation and the Kittitas County Conservation District (KCCD). The ICR serves multiple purposes for the SMP update efforts, including the identification of degraded shoreline areas that may be suitable for restoration. The portions of the report that are relevant to restoration planning are summarized in the following sections.

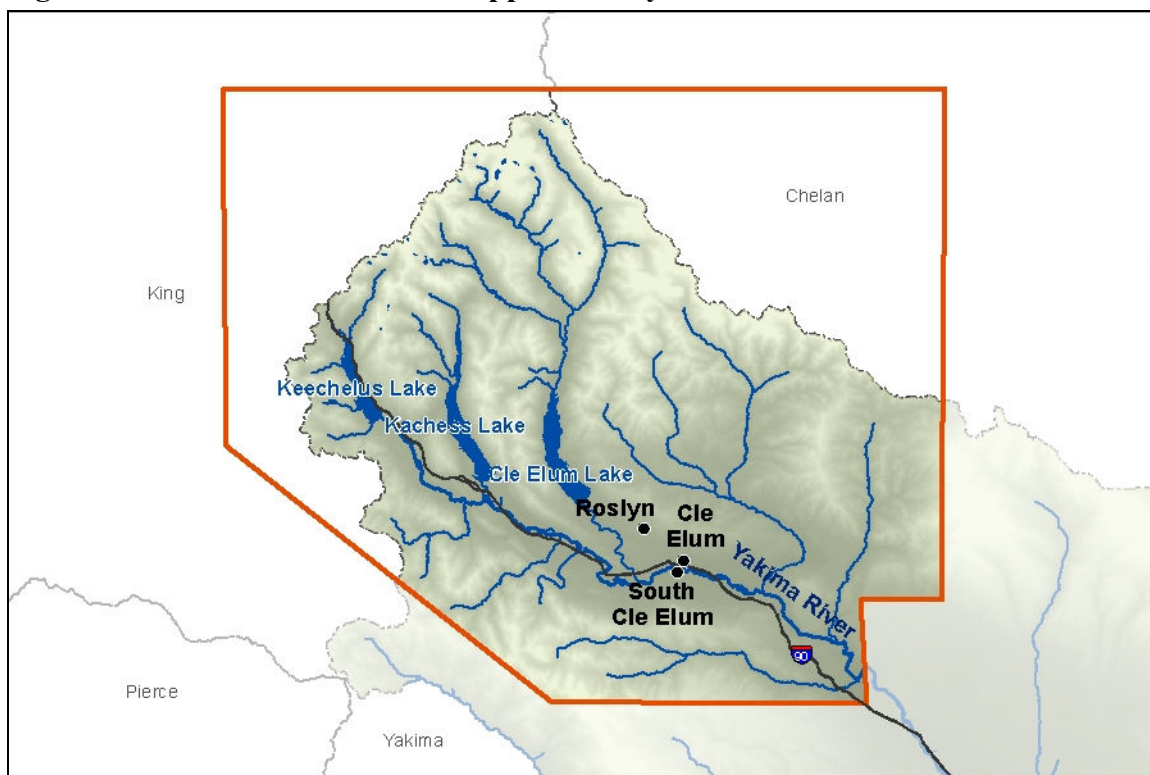
CHAPTER 2. SUMMARY OF CURRENT SHORELINE CONDITIONS AND IMPAIRMENTS

The following sections are summarized from the ICR (ESA, 2013), and describe the current ecological conditions and ecological impairments within the two major river basins that are located within Kittitas County (the upper Yakima and Little Naches rivers) and the portion of the Columbia River within County shoreline jurisdiction. Due to its size and heterogeneity, the Yakima River Basin is separated into three geographic areas: Upper County, Kittitas Valley, and Yakima Canyon. Additional detailed information on shoreline conditions, including identification of degraded areas, impaired ecological functions, and areas with potential for ecological restoration, is found in the ICR.

2.1 Yakima River Basin—Upper County Area

Shorelines in Upper County include the upper Yakima River and its tributaries from the Yakima River headwaters to the Taneum Creek confluence (Figure 2-1). There are 35 streams and 29 lakes and ponds within the Upper County area that are considered shorelines of the state. Land cover is a mix of forest, shrub-steppe, agriculture, and developed land.

Figure 2-1. Yakima River Basin “Upper County” shorelines.



The majority of the area is characterized by undeveloped forest and three large glacially-formed lakes, Keechelus Lake, Lake Kachess, and Lake Cle Elum that have been converted to reservoirs to regulate the flow of the Yakima River and part of the Cle Elum River as part of the Bureau of Reclamation's project to supply irrigation water to the Yakima Basin. The three reservoirs are situated on mostly National Forest or private lands that are primarily used for recreation and timber harvest. The reservoirs provide habitat for several priority fish species, but are managed as irrigation reservoirs and have documented water quality impairments such as elevated temperature. The dams associated with each reservoir are barriers to fish passage to upstream tributaries, although a temporary fish passage structure has recently been constructed at Lake Cle Elum Dam that allows downstream smolt migration. The reservoirs are set among large, unfragmented blocks of habitat for spotted owl, elk, mountain goat, gray wolf, and other wildlife species. The shoreline of the reservoirs contains roads and a limited amount of residential development, both of which encroach on existing riparian vegetation.

Each reservoir is fed by numerous tributaries within the Cascade Mountains. The tributary streams and lakes are located primarily on commercial forest-zoned lands (including the Alpine Lakes Wilderness and other National Forest lands) that are mostly undeveloped. Exceptions to this include lower Coal Creek, which is constrained by I-90 along much of its length, and a residential subdivision adjacent to the downstream end of Gold Creek.

Within the Upper County area, the upper Yakima River flows approximately 44 miles from the Keechelus Lake to the Taneum Creek confluence. There are several large tributaries along this section of the Yakima, including: Kachess River, Cle Elum River, Teanaway River, Swauk Creek, Cabin Creek, Big Creek, and Little Creek. In addition, the Yakima River flows through the cities of Cle Elum and South Cle Elum. The upper Yakima River and several of its tributaries are designated as critical habitat for Endangered Species Act-listed Mid-Columbia Summer Steelhead and bull trout.

The upper Yakima River originates at the Keechelus Lake outlet and flows from forested slopes and foothills of the eastern Cascades down to arid shrub-steppe habitats. Between Keechelus and Easton Dam, river floodplain functions are excellent with a braided, meandering channel and numerous side channels. Below Easton Dam, the river becomes one large main channel and is largely separated from its natural floodplain by transportation infrastructure, including I-90, BNSF railroad, and the John Wayne Heritage Trail. Some high-density residential subdivisions and urban areas (Cle Elum and South Cle Elum) also border the river.

The dam at Lake Easton has a fish ladder, although upper Yakima Basin fish populations have declined due to historic damming, irrigation operations and diversions, and land development. High summer flows and low winter flows, as a result of the "flip-flop" irrigation operation, affect both juvenile salmonid rearing and overwintering habitats. The flip-flop irrigation operation refers to release of water from the Upper Yakima reservoirs to supply irrigation during summer months while water is held back in the Naches Basin reservoirs. In September, when the Upper Yakima reservoirs are low, the operation flips to the Naches Basin and water is released from Rimrock and Bumping reservoirs. The

purpose of flip-flop is to encourage returning Chinook salmon to spawn at lower river stages in the fall, reducing the flow levels needed to keep redds watered and protected during their incubation period (November through March). Anadromous fisheries populations have improved in recent years as a result of better fisheries management, habitat and facility improvements, hatchery supplementation, and reintroduction efforts.

The Kachess River flows from Kachess Lake and into Lake Easton, which also receives flow from the Yakima River. The shoreline is primarily forested with a small residential community located on the right bank of the Kachess River north of I-90 and recreational parkland around Lake Easton. The riparian zone of the lake is constricted on three sides by roadways.

Cabin Creek is a right-bank tributary to the Yakima River, entering upstream of Lake Easton. Its watershed is largely undeveloped, but timber harvest is a common land use. The creek experiences flashy flows, largely because of widespread clearcuts in the upper watershed, couple with periodic rain-on-snow events. A small residential development has altered a portion of the riparian corridor along the lower creek, but much of the lower creek is protected in a conservation easement.

Big and Little Creeks are right-bank tributaries of the Yakima River. Both streams originate in dense forest and flow through narrow valleys with steep slopes before reaching the valley bottom where agricultural and rural residential development have altered much of the riparian corridor. Irrigation diversions are present which contribute to elevated temperatures and a low instream flow during the summer months, but work is ongoing to secure water rights for improving stream flows.

The Lower Cle Elum River is a left-bank tributary to the Yakima River and flows between Cle Elum Lake and just south of I-90. The river is a large channel with multiple large side-channel complexes. It is considered a high-density salmon spawning area; in most years half of the Chinook salmon redds in the upper Yakima River watershed are found immediately upstream and downstream of the confluence of the Cle Elum and Yakima Rivers. Wetland habitat is extensive throughout the reach and elk wintering habitat is present. Some areas of vegetation alteration exist, but the majority of the shoreline consists of dense riparian forest and shrub habitat. Most of the riparian area within shoreline jurisdiction is protected within conservation easements.

The Teanaway River is a left-bank tributary of the Yakima River that contains three major tributaries: the North, Middle, and West Forks. The tributaries traverse among steep slopes of the eastern Cascades before joining the mainstem of the river. The upper watershed is mapped as critical habitat for northern spotted owl and contains habitat for other priority bird species. The mainstem, Middle and West Forks experience low flows and associated high water temperatures during the summer and fall, partially the result of multiple stream diversions for agricultural use. The mainstem has been largely disconnected from its floodplain since the late 1800s. Human alterations have impacted river system processes: ponds and wetlands have been drained and side channels filled; the river has been straightened and levees have been constructed to protect adjacent lands. Beaver

populations have been reduced so there are fewer dams to retain and disperse flows. Downstream of the confluence of the three forks, the river has been moved to the edge of the valley, channelized, and armored to facilitate agricultural activities. Habitat for priority fish species is present although the river was historically used to transport timber which caused the removal of large woody debris and scoured the streambed reducing the number of pools and other in-channel rearing habitats. Today, riparian vegetation is hampered by reinforcement of streambanks to protect roads and property.

Swauk Creek is a left-bank tributary of the Yakima River that originates in dense forest and flows through an arid canyon at its downstream end. It has a naturally defined stream corridor that has been significantly affected by road construction and mining. Priority fish species are present although past activities have reduced stream complexity, summer flows are low to intermittent, and multiple passage barriers are present. Limited residential development is present in the lower portion of Swauk Creek.

2.2 Yakima River Basin—Kittitas Valley Area

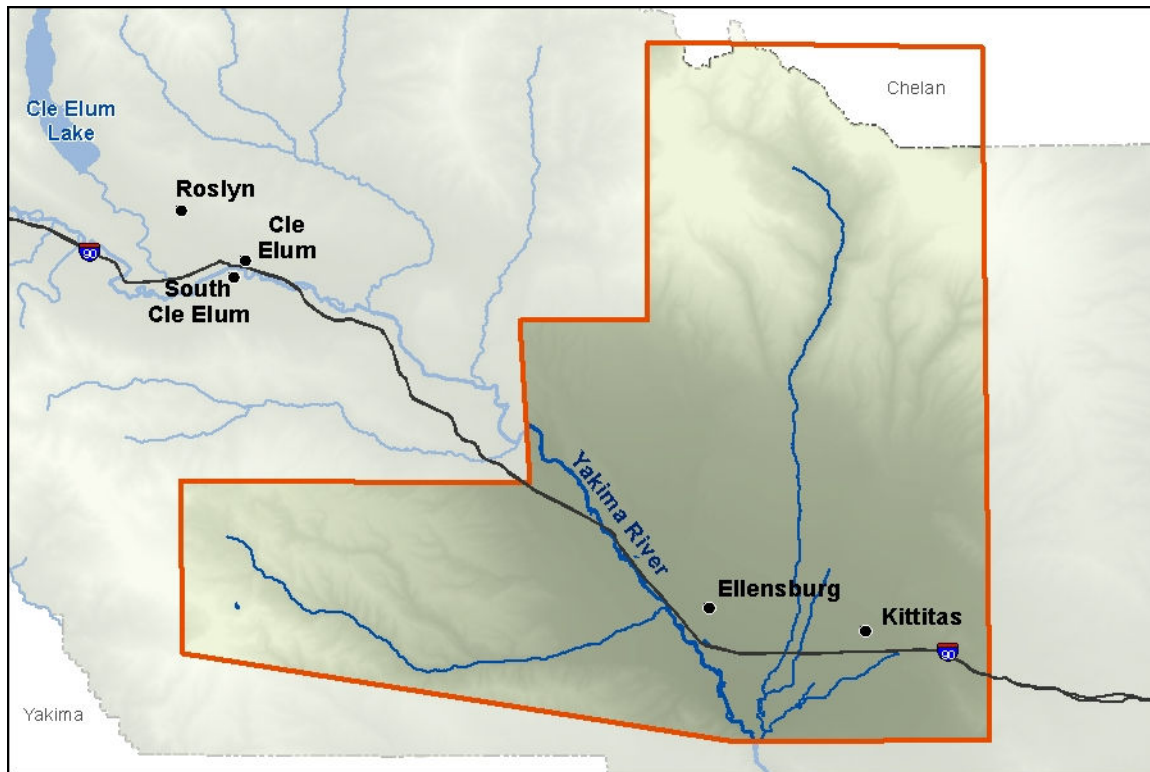
Shorelines in the Kittitas Valley portion of the Yakima River Basin include the Yakima River and its tributaries between the Taneum Creek confluence and the Wilson Creek confluence (Figure 2-2). In this region, there are 10 streams and 7 lakes and ponds that are considered shorelines of the state. In addition to the Yakima River, the major streams include Taneum, Manastash and Wilson Creeks. This portion of the County is characterized by less precipitation and higher temperature extremes. In general, coniferous forest with open stands of ponderosa pine and some lodgepole pine surround the upstream portions of the major streams. The lower reaches are characterized by semi-arid shrub-steppe and grasslands that have been converted to agricultural uses.

The Yakima River within the Kittitas Valley is bordered primarily by undeveloped land zoned for forest and range, agricultural land and low-density rural residential. Land use intensifies near the City of Ellensburg, although the majority of low-lying land adjacent to the river is mostly irrigated agriculture. Most of the native shrub-steppe habitat has been converted to agricultural land, which has resulted in considerable alteration and hydrologic change to the landscape. The river is disconnected from its natural floodplain in several areas by roads (including I-90 and Highway 10) and linear hydromodifications. In addition, historic gravel mining has impacted both the structure and function of the Yakima River floodplain. Several unnamed waterbodies found adjacent to the river are former gravel pits excavated in the floodplain. These have altered seasonal overbank storage and riparian habitat.

Priority fish species are present in the river and some of the waterbodies despite the reduced amount of riparian vegetation, large wood, altered hydrologic regime and isolation of side channel habitats. Water quality is negatively affected by irrigation return water and untreated stormwater runoff from urban areas. However, anadromous fisheries have improved in recent years as a result of better fisheries management, habitat and facility improvements, hatchery supplementation, and reintroduction efforts. The “Kittitas Valley”

portion of the Yakima River and several of its tributaries are designated as critical habitat for Endangered Species Act-listed Mid-Columbia Summer Steelhead.

Figure 2-2. Yakima River Basin “Kittitas Valley” shorelines.



Taneum Creek is a right-bank tributary to the Yakima River that is mostly undeveloped and flanked by heavily forested areas along its North and South Forks. The lower portion of the stream traverses agricultural lands and some limited residential development. Taneum Creek provides priority fish habitat but is impaired by past logging and road construction in the upper reaches and by low instream flows and limited channel complexity downstream of I-90. Significant work has been done to remove passage barriers in Taneum Creek, and work is ongoing to secure water rights for instream flows.

Taneum Creek experiences elevated temperatures, turbidity, and suspended sediments throughout. Wetlands are present along the mainstem and riparian cover is narrow and intermittent in lower reaches. The upper reach of the mainstem and the North and South Forks is mapped as spotted owl critical habitat and elk and deer wintering and calving habitat. The mainstem has the potential for channel migration and the stream has been characterized as having a large and unpredictable floodplain and flood capacity.

Manastash Creek is a right-bank tributary to the Yakima River located downstream of Taneum Creek. The upper portion of the stream flows through a relatively narrow valley that gives way to flat agricultural land. Residential development is adjacent to the river for over half of the mainstem while none is present along the South Fork. Manastash Creek is fully appropriated for irrigation and a portion of the lower reach lacks surface flow during

the summer months of most years. Lack of flow is attributed to irrigation diversions and the porous substrate of the channel bed. Low instream flows and partial migration barriers limit fish use although priority species are present. Significant flood, erosion, and sedimentation hazard are present along the creek, due to the volume of sediment moving through the system, development within the floodplain, reduced riparian vegetation, and confined channel reaches and roadway crossings. Major investments have been made to remove passage barriers, screen diversions and increase instream flows. The last major passage barriers should be removed by 2015. The KCCD, along with Kittitas County and local owners, are currently studying the lower 13 miles of the creek to determine priority actions for alleviating flooding and erosion and improving salmonid productivity.

Matoon Lake is a 26-acre lake located near Ellensburg. The lake borders I-90 and has undeveloped land that is zoned for urban residential. Matoon Lake is a former gravel pit that is characterized by shallow water, undeveloped shoreline, and reduced riparian cover due to an unpaved road that extends the perimeter of the lakeshore. WDFW annually stocks the lake with trout, but habitat has been degraded by non-native invasive aquatic vegetation.

Wilson Creek is a left-bank tributary of the Yakima River, and three of its tributaries are shorelines of the state (Naneum, Cherry, and Parke creeks). The Wilson Creek system originates north of Ellensburg, although only the lower portion is a shoreline of the state. Land use along the streams is a mix of agriculture and low-density and rural residential with private, commercial forest land in the upper portion of Naneum Creek. Wilson Creek and its tributaries have been extensively altered to provide irrigation for crop production, resulting in channels being rerouted, channelized, and diked. Nearly the entirety of Wilson, Cherry, and Parke creeks and approximately the lower half of Naneum Creek flow through actively farmed lands. Some residential and commercial development, associated with farming activities, is located along the streams. Water temperatures are elevated during the summer months and in comparison to the Yakima River, the streams contain higher nutrient levels, suspended sediment, and fecal coliform bacteria due to irrigation return flows, livestock, and failing septic systems. Riparian cover is still relatively intact within the forested canyon along the upper portion of Naneum Creek, and northern spotted owls and mule deer wintering habitat are identified.

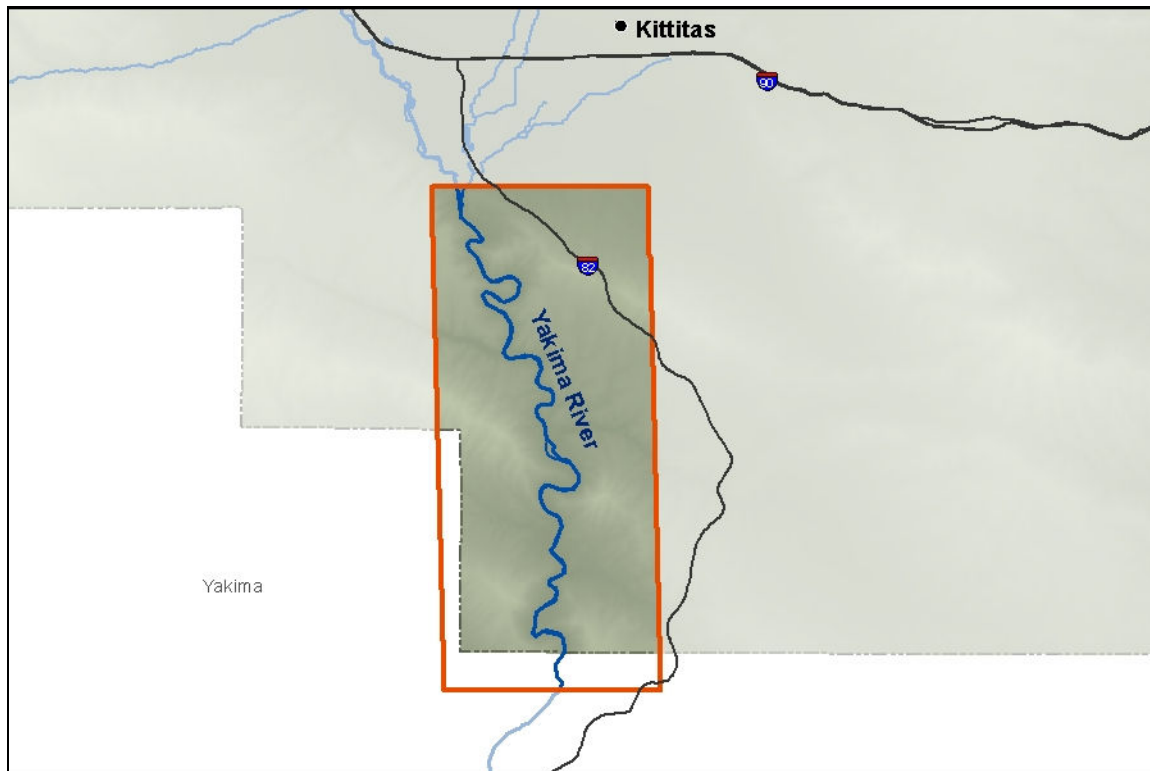
Fiorito Lake is a 54-acre lake located adjacent to I-82 and upstream of the confluence of Wilson and Cherry Creeks. The shoreline supports little riparian cover and a constructed berm splits the waterbody into two sections. Similar to Matoon Lake described above, Fiorito Lake is stocked with trout but habitat has been degraded by non-native invasive aquatic vegetation.

2.3 Yakima River Basin—Yakima Canyon Area

The only Kittitas County shoreline of the state within the Yakima Canyon is the Yakima River, which flows approximately 21 miles from the Wilson Creek confluence to the Kittitas-Yakima County boundary just downstream of Roza Dam (Figure 2-3). Over half of the land bordering the river is state and federal land and the remaining is zoned for

agriculture and forest and range. This portion of the Yakima River is relatively sinuous compared to upstream reaches of the river and flows through a steep, deep-walled canyon. There are no side-channel complexes or large wetland areas and only a narrow riparian corridor is present. Much of the land adjacent to the river is steep and the river has experienced large debris flows due to high intensity precipitation events. Several priority fish species are present in the river despite water quality impairments and adjacent hydromodification. Priority wildlife species in the canyon include bighorn sheep, elk, golden eagle, and mule deer and cliff/bluff habitats are mapped throughout the corridor. In addition, the “Yakima Canyon” portion of the Yakima River is designated as critical habitat for Endangered Species Act-listed Mid-Columbia Summer Steelhead.

Figure 2-3. Yakima River Basin “Yakima Canyon” shorelines.



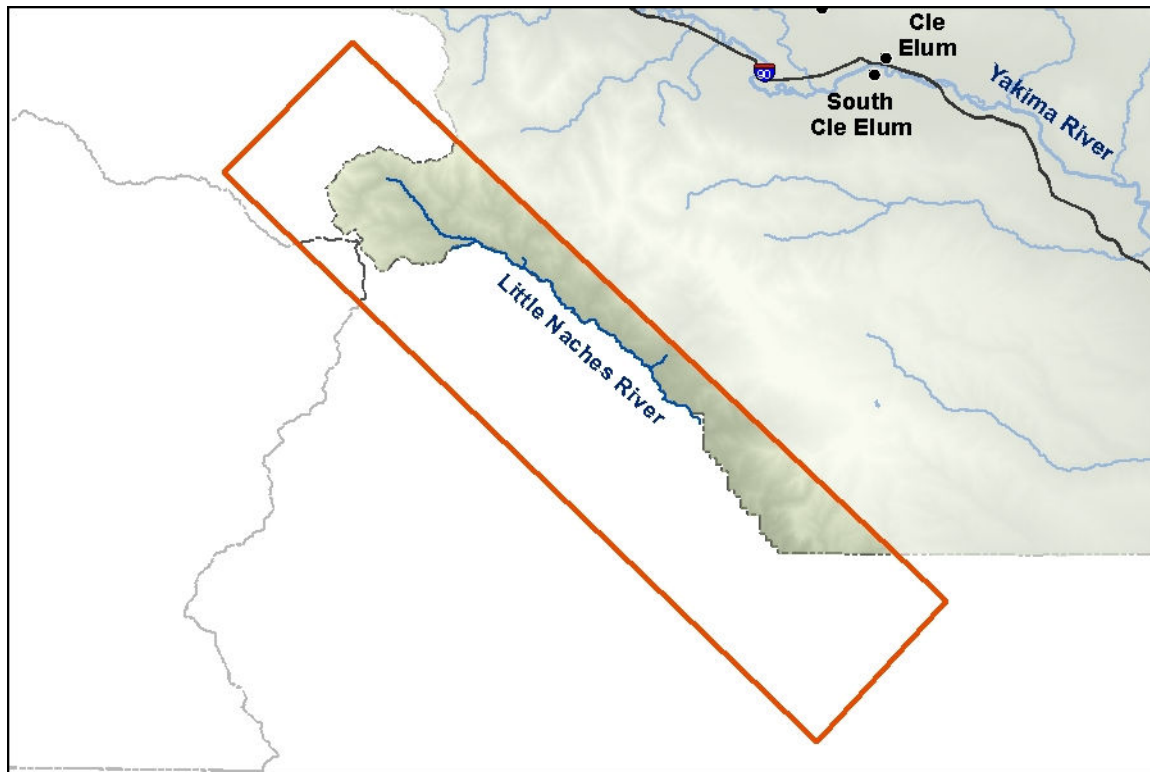
Due to the geology and the presence of Canyon Road and a railroad, there is limited development potential in this portion of the shoreline. However, the river and its banks support highly used recreational areas for camping, fishing and hunting.

2.4 Little Naches River Basin

The Little Naches River is a right bank tributary to the Naches River (in Yakima County) and forms the border between Kittitas and Yakima counties (Figure 2-4). Approximately 14 miles of the river is a shoreline of the state within Kittitas County jurisdiction. Tributaries to the river that are shorelines of the state include the river's Middle and North Forks, Bear Creek, and Quartz Creek. The river and its tributaries are located almost entirely on National Forest lands that are undeveloped.

Forest Service and logging roads have had negative impacts on fish habitat quality, primarily due to erosion. In addition, Forest Service Road 1900 blocks the river from its floodplain in several locations. Large wood was removed from the lower 10 miles of the river as part of “channel cleaning” efforts in the 1970s. Despite these alterations, the upper part of the Little Naches River (above Salmon Falls) is considered to provide good fish habitat with abundant spawning gravel, riparian cover, adequate summer flows, and large wood. The Little Naches River and several of its tributaries are designated as critical habitat for Endangered Species Act-listed Mid-Columbia Summer Steelhead and bull trout.

Figure 2-4. “Little Naches River” shorelines.



Coniferous forest dominates the riparian zone of Little Naches River and its tributaries, which contributes substantial woody material to the system and connects large areas of forest habitat. Forested and scrub-shrub wetlands are mapped in the shoreline of the mainstem and the North Fork tributary is mapped as providing habitat for priority species including northern spotted owl and harlequin duck. Talus slopes and elk calving areas are also priority habitats identified in the area.

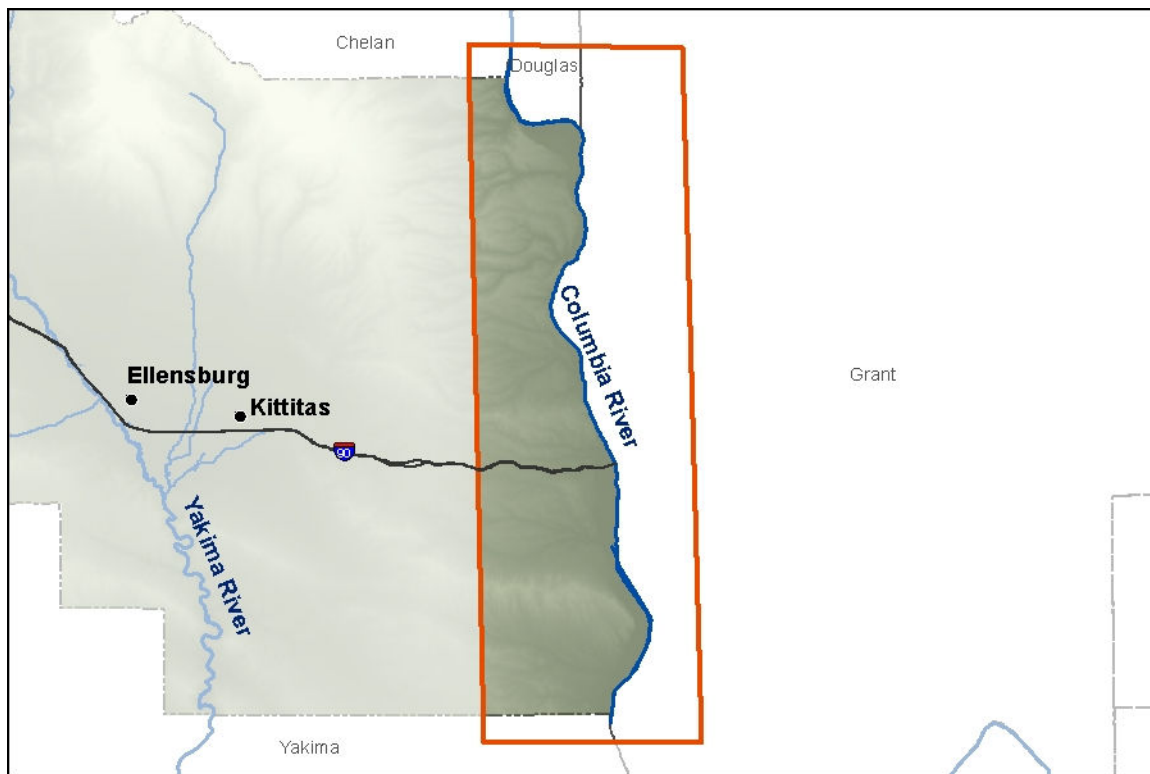
2.5 Columbia River

The Columbia River flows approximately 1,243 miles from the Rocky Mountains of British Columbia to the Pacific Ocean in Astoria, Washington. A small section of the river (43 miles) forms the eastern border of Kittitas County where it is impounded behind the Wanapum Dam, one of the 14 hydroelectric dams located on the mainstem of the Columbia River (Figure 2-5). The shoreline in this section is generally undeveloped with the exception of

the portion that runs along the town of Vantage. The Yakima Training Center is located within the downstream portion of the shoreline and the shoreline is zoned for parks and open space, forest and range and agriculture.

This portion of the Columbia River is located in a canyon with moderate to steep topographic relief. Although it provides habitat for a variety of priority fish species, the river at this location has several water quality impairments and is highly influenced by dam operations. Very limited wetland habitat is mapped along the river within the County boundaries. The Wanapum and Priest Rapids dams significantly alter the hydrology and fish habitat quality of this portion of the Columbia River shoreline. This portion of the Columbia River is designated as critical habitat for Endangered Species Act-listed Mid-Columbia Summer Steelhead and Chinook salmon.

Figure 2-5. “Columbia River” shorelines.



CHAPTER 3. RESTORATION GOALS, PRIORITIES, AND OPPORTUNITIES

This chapter describes the shoreline restoration goals and priorities for the two major watersheds located within Kittitas County (the Yakima and Little Naches rivers), as well as the portion of the Columbia River within County shoreline jurisdiction. Matrices detailing specific, identified restoration projects are also included.

3.1 Overall Goals and Priorities

Shoreline restoration goals and priorities in Kittitas County have been established by several organizations, including government agencies and tribes, and are described in detail in the ICR (ESA, 2013). The identified restoration goals and priorities for the river systems within the County are summarized below.

3.1.1 Yakima River and Tributaries

Major restoration goals and priorities for the Yakima River and its tributaries include:

- 1) Restore riparian conditions in the lower reaches of Yakima River tributaries, and off-channel and floodplain habitats of the Yakima River
- 2) Address the negative effects of flip-flop through alteration of reservoir operations
- 3) Remove floodplain confining structures where practical, and widen bridges and replace culverts with bridges to allow channel migration
- 4) Restore floodplain ecological functioning by placing large woody debris and engineered log jams, bank reshaping, and channel reconstruction
- 5) Eliminate barriers to fish passage such as irrigation diversions dams or culverts through removal, redesign, or retrofitting
- 6) Use bridges, bottomless culverts, or other approved methods to improve fish passage when designing new or modifying existing road crossings
- 7) Increase irrigation efficiency to reduce the amount of water diverted from rivers
- 8) Install screens to block fish from entering irrigation canals
- 9) Protect floodplain and critical upland habitat through acquisition of land and conservation easements
- 10) Reduce impervious surfaces and remove unnecessary roads

- 11) Set back channel confining structures (hydromodifications) and remove bank armoring where land use is compatible with periodic flooding or channel migration
- 12) Encourage the presence of beavers in areas with compatible land uses

3.1.2 Little Naches River and Tributaries

Major restoration goals and priorities for the Little Naches River and its tributaries include:

- 1) Remove floodplain confining structures where practical, and widen bridges and replace culverts with bridges to allow channel migration
- 2) Restore floodplain ecological functioning by placing large woody debris and engineered log jams, bank reshaping, riparian vegetation planting and management and channel reconstruction
- 3) Remove unnecessary roads and improve maintained roads to reduce watershed impacts
- 4) Protect floodplain and critical upland habitat through acquisition of land and conservation easements

3.1.3 Columbia River

A relatively small portion of the Columbia River and its adjacent shorelands are located within Kittitas County. The Wanapum Dam, which is the most significant alteration to this portion of the river, was recently relicensed for operation until 2052. As part of the relicensing agreement, there is ongoing mitigation work to improve fish and wildlife habitat quality in the dam and reservoir vicinity. Given the relatively small portion of the Columbia River within Kittitas County, the river is not expected to be a major restoration focus for the County. There are currently numerous federal and state agencies, as well as tribes and other organizations, working to improve habitat conditions in the river.

3.2 Matrices of Shoreline Restoration Opportunities

This section contains matrices (Tables 3-1 through 3-5) of site-specific restoration opportunities for the two major watersheds located within the County (the Yakima and the Little Naches rivers) and the portion of the Columbia River located within County shoreline jurisdiction. The Yakima Valley River Basin is separated into three separate matrices: Upper County area, Kittitas Valley area, and Yakima Canyon area. Table 3-6 is a matrix of programmatic shoreline restoration opportunities applicable to all County streams and waterbodies.

The major components of each restoration opportunity are listed in the matrices. The identified components correspond to specific ecological functions that can be improved through restoration. The following definitions apply to the restoration components:

- **Instream flow improvement** means actions that seek to retain or increase stream flows necessary for sustaining aquatic life, such as implementing irrigation efficiency projects or acquiring water rights.
- **Water quality improvement** means actions that would improve the water quality of streams/water bodies and downstream resources, such as decommissioning unused roads in a watershed.
- **Riparian vegetation restoration** means re-establishing a community of native riparian vegetation along a stream or waterbody through supplemental planting.
- **Habitat preservation** means the permanent protection or acquisition of lands with significant ecological value and potential for future development.
- **Fish passage** means correcting barriers to fish passage, such as replacing an undersized culvert or installing fish passage facilities at a dam.²
- **Instream habitat restoration** means improving habitat within streams, such as installing large woody debris or reconfiguring a historically channelized stream channel.
- **Aquatic habitat restoration** means improving habitat within lakes and ponds, such as controlling invasive aquatic plant species.
- **Floodplain enhancement** means re-habilitating floodplain habitat, such as removing or setting-back linear hydromodifications along a stream that block access to its historical floodplain.
- **Research/education** means actions to educate landowners, the public, and the scientific community about shoreline conservation and restoration.

The status of each restoration opportunity is listed, based upon the following:

- **Under way** projects have been planned and funded and have proponent organization(s); actual construction of the project may be underway.
- **Proposed** projects have undergone preliminary planning and have proponent organization(s), but may not yet be fully funded. Construction of the project has not begun.
- **Potential** projects have been identified during development of the ICR (2013), but have not yet undergone any additional planning and have no project proponent.

² Repairing fish passage barriers on state-owned lands has been mandated by the U.S. District Court, per the Boldt Decision of 1974. In May 2013, the State appealed the District Court decision to the Ninth Circuit Court of Appeals.

The specific section in the ICR (ESA, 2013) that describes the individual stream/waterbody is shown in the first column. The last column shows the jurisdiction (unincorporated County and/or specific municipality) where the project is located.

Table 3-1. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Upper County Area

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Big Creek (3.10)	N/A	Securing water rights to improve instream flows.	<ul style="list-style-type: none">• Instream flow improvement	Lower creek	Underway	Washington Water Trust	Unincorporated County
	N/A	Ensure long-term protection of stream corridors via acquisitions, easements and other agreements with willing landowners.	<ul style="list-style-type: none">• Habitat preservation	Lower Creek	Underway	Forterra and others	Unincorporated County
Cabin Creek (3.4)	N/A	Decommission or repair logging roads to reduce erosion.	<ul style="list-style-type: none">• Water quality improvement	Upper watershed	Potential	None identified	Unincorporated County
Cle Elum River (lower) (3.12)	Cle Elum Instream Habitat	Reconnect side channels and increase channel complexity in lower Cle Elum River	<ul style="list-style-type: none">• Habitat preservation• Floodplain enhancement	Cle Elum River below dam	Underway	Kittitas Conservation Trust	Unincorporated County and Cle Elum
Cle Elum River (upper) and tributaries (3.14)	N/A	Decommission and revegetate unused roads.	<ul style="list-style-type: none">• Water quality improvement• Riparian vegetation restoration	Entire watershed	Potential	None identified	Unincorporated County
Gold Creek (3.2)	Gold Creek Habitat Project	Investigate Gold Creek dewatering causes and associated impacts and produce conceptual designs for bull trout restoration. Implement identified preferred alternative.	<ul style="list-style-type: none">• Instream flow improvement• Instream habitat restoration	Lower creek	Underway	Kittitas Conservation Trust	Unincorporated County
Lake Cle Elum (3.14)	Cle Elum Dam Fish Passage	Construction of permanent upstream and downstream passage facilities.	<ul style="list-style-type: none">• Fish passage	Cle Elum Dam	Underway	U.S. Dept. of Reclamation and the Yakama Nation	Unincorporated County
	N/A	Decommission and revegetate unused roads along the shoreline.	<ul style="list-style-type: none">• Riparian vegetation restoration• Water quality improvement	Entire lakeshore	Potential	None identified	Unincorporated County
Kachess Lake (3.6)	Kachess Dam Fish Passage	Construction of permanent upstream and downstream passage facilities.	<ul style="list-style-type: none">• Fish passage	Kachess Dam	Proposed	U.S. Dept. of Reclamation and Ecology	Unincorporated County
Keechelus Lake (3.1)	Keechelus Dam Fish Passage	Construction of permanent upstream and downstream passage facilities.	<ul style="list-style-type: none">• Fish passage	Keechelus Dam	Proposed	U.S. Dept. of Reclamation and Ecology	Unincorporated County
Little Creek (3.11)	N/A	Secure water rights to improve instream flows.	<ul style="list-style-type: none">• Instream flow improvement	Lower creek	Potential	None identified	Unincorporated County
Silver Creek (3.8)	N/A	Correct the fish passage barrier at Sparks Road.	<ul style="list-style-type: none">• Fish passage	Sparks Road	Potential	None identified	Unincorporated County

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Swauk Creek (3.16)	Swauk & Iron Creek Passage and Restoration	Replace WSDOT culverts to allow full fish passage and restore adjoining floodplains to improve fish habitat and enhance floodplain water storage along a 1.5-mile reach of Swauk Creek.	<ul style="list-style-type: none"> • Instream flow improvement • Fish passage • Riparian vegetation restoration • Instream habitat restoration • Floodplain enhancement 	RM 17.3 to 18.8 of Swauk Creek	Proposed	WSDOT, Mid-Columbia Regional Fisheries Enhancement Group, USFS	Unincorporated County
	N/A	Increase stream flows through lease or purchase of water rights and water conservation projects	<ul style="list-style-type: none"> • Instream flow improvement 	Entire river	Underway	Washington Water Trust	Unincorporated County
	N/A	Correct fish passage barriers within the watershed.	<ul style="list-style-type: none"> • Fish passage 	Entire watershed	Potential	USFS, others	Unincorporated County
	N/A	Revegetate disturbed riparian areas, where possible.	<ul style="list-style-type: none"> • Riparian vegetation restoration 	Entire River	Potential	None identified	Unincorporated County
	Swauk Floodplain and Riparian Restoration	Remove or setback linear hydromodification, reconnect side channels and restore riparian vegetation to improve floodplain functioning, where possible.	<ul style="list-style-type: none"> • Floodplain enhancement • Riparian vegetation restoration • Instream habitat restoration • Instream flow improvement 	Entire mainstem river and lower portions of its major tributaries (Williams, First, Iron, etc.)	Potential	Yakama Nation, Kittitas Conservation Trust, Mid-Columbia Regional Fisheries Enhancement Group, USFS	Unincorporated County
Teanaway River (mainstem and lower portions of forks) (3.15)	N/A	Remove or setback linear hydromodification, reconnect side channels and restore riparian vegetation to improve floodplain functioning, where possible.	<ul style="list-style-type: none"> • Floodplain enhancement • Riparian vegetation restoration 	Entire mainstem river and lower portions of forks	Potential	None identified	Unincorporated County
	N/A	Secure water rights to improve instream flows.	<ul style="list-style-type: none"> • Instream flow improvement 	Entire mainstem river	Underway	Washington Water Trust and others	Unincorporated County
		Protect channel migration zone of the mainstem Teanaway River and its forks via acquisitions, easements and other conservation agreements with willing landowners.	<ul style="list-style-type: none"> • Habitat protection 	Mainstem Teanaway and Lower portions of the Teanaway River forks	Proposed	Kittitas County, Forterra, WSDOT, others	Unincorporated County
	Teanaway Community Forest	Manage newly-acquired Teanaway Community Forest to protect and restore the forks of the Teanaway River, their tributaries and watersheds.	<ul style="list-style-type: none"> • Habitat preservation • Riparian vegetation restoration • Instream habitat restoration • Floodplain enhancement 	Upper mainstem river and the lower portions of its forks	Under way	Washington Departments of Natural Resources and Fish and Wildlife	Unincorporated County

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
	Teanaway Forks Large Wood Trapping	The project proposes to install large wood trapping structures within the Teanaway River forks, which would increase pool frequency, retain spawning gravels, and other potential habitat improvements.	<ul style="list-style-type: none"> • Instream habitat restoration 	Lower portions of the Teanaway River forks	Proposed	Mid-Columbia Regional Fisheries Enhancement Group	Unincorporated County
Teanaway River (Middle Fork) (3.15)	N/A	Securing water rights to improve instream flows.	<ul style="list-style-type: none"> • Instream flow improvement 	Lower river	Potential	None identified	Unincorporated County
Teanaway River (West Fork) (3.15)	N/A	Increase summer stream flows.	<ul style="list-style-type: none"> • Instream flow improvement 	Lower river	Potential	None identified	Unincorporated County
Yakima River (3.3)	Upper Yakima Instream Habitat	Install large woody debris and other instream structures to improve channel complexity	<ul style="list-style-type: none"> • Instream habitat restoration 	Multiple	Proposed	Kittitas Conservation Trust, Yakama Nation	Unincorporated County, Cle Elum, and South Cle Elum
	Upper Yakima Habitat Protection	Protect floodplain and channel migration zone of the mainstem Yakima River via acquisitions, easements and other conservation agreements	<ul style="list-style-type: none"> • Habitat preservation 	Multiple	Underway	Kittitas Conservation Trust, Kittitas County, Forterra, and others	Unincorporated County, Cle Elum, and South Cle Elum
	N/A	Remove or setback linear hydromodification, reconnect side channels, and restore riparian vegetation to improve floodplain functioning, where possible.	<ul style="list-style-type: none"> • Floodplain enhancement • Instream habitat restoration • Riparian vegetation restoration 	Opportunities are present throughout the river	Potential	None identified	Unincorporated County, Cle Elum, and South Cle Elum
	“K to K” pipeline	Construction of a pipeline to convey water from Lake Keechelus to Lake Kachess to reduce flows and improve habitat conditions during high flow release below Lake Keechelus.	<ul style="list-style-type: none"> • Instream flow improvement 	Lakes Keechelus and Kachess	Underway	U.S. Dept. of Reclamation and Ecology	Unincorporated County

Table 3-2. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Kittitas Valley Area

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Cherry Creek (4.7)	N/A	Revegetate the riparian corridor.	<ul style="list-style-type: none">Riparian vegetation restoration	Entire creek	Potential	None identified	Unincorporated County
Fiorito Lake (4.6)	N/A	Control invasive aquatic weeds within the lake.	<ul style="list-style-type: none">Aquatic habitat restoration	Entire lake	Potential	None identified	Unincorporated County
Manastash Creek (4.3)	N/A	Decommission and revegetate unused roads and improve remaining roads to reduce watershed impacts	<ul style="list-style-type: none">Water quality improvementRiparian vegetation restoration	Upper watershed	Potential	None identified	Unincorporated County
	N/A	Remove or setback linear hydromodification including bridges, reconnect side channels, and restore riparian vegetation to improve floodplain functioning, where possible. Specific projects have been identified in the recent Manastash Creek Assessment; additional work is possible in the upper watershed.	<ul style="list-style-type: none">Floodplain enhancementInstream habitat restorationRiparian vegetation restoration	Opportunities are present throughout the mainstem and its forks	Underway	Kittitas County Conservation District, Kittitas County	Unincorporated County
	N/A	Secure water rights to improve instream flows.	<ul style="list-style-type: none">Instream flow improvement	Lower creek	Underway	Kittitas Conservation District, Trout Unlimited, Ecology	Unincorporated County
	Consolidated Pipeline and Manastash Water Ditch Association (MWDA) Pipeline Construction	Replace MWDA earth ditch with 4 miles of pipeline and remove three unscreened diversion on Manastash Creek. The project would also permanently put 1.9 cfs of winter stock water into trust from November to March, increasing instream flows in the lower creek.	<ul style="list-style-type: none">Fish passageInstream flow improvement	Lower creek	Underway	Kittitas County Conservation District	Unincorporated County
	Reed Diversion Removal	Remove the fish passage barrier at Reed Diversion on Manastash Creek.	<ul style="list-style-type: none">Fish passage	Reed diversion dam	Underway	Kittitas County Conservation District	Unincorporated County
	Anderson Diversion Irrigation Water Acquisition	Irrigation water rights off Anderson Diversion would be acquired by Trout Unlimited to provide instream flow in Manastash Creek and remove the unscreened Anderson diversion.	<ul style="list-style-type: none">Instream flow improvement	Lower Creek	Proposed	Kittitas County Conservation District	Unincorporated County
	Manastash Creek Sprinkler Conservations	Convert 154 acres of rill irrigation to sprinkler irrigation along creek, and remove an unscreened diversion and seasonal fish passage barrier.	<ul style="list-style-type: none">Instream flow improvementFish passage	Lower Creek	Proposed	Kittitas County Conservation District	Unincorporated County
Matoon Lake (4.4)	N/A	Control invasive aquatic weeds within the lake.	<ul style="list-style-type: none">Aquatic habitat restoration	Entire lake	Potential	None identified	Unincorporated County, Ellensburg

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Naneum Creek (4.5)	N/A	Revegetate the riparian corridor and investigate re-establishing a natural stream channel (the creek was historically channelized).	<ul style="list-style-type: none"> • Instream habitat restoration • Riparian vegetation restoration • Water quality improvement 	Lower creek	Potential	None identified	Unincorporated County
	N/A	Install fish screens on irrigation diversions, correct fish passage barriers, and separate irrigation canals and the creek channel to prevent entrapment of fish.	<ul style="list-style-type: none"> • Fish passage 	Lower creek	Potential	Kittitas County Conservation District	Unincorporated County
Parke Creek (4.7)	N/A	Revegetate the riparian corridor.	<ul style="list-style-type: none"> • Riparian vegetation restoration 	Entire creek	Potential	None identified	Unincorporated County
	N/A	Install fish screens on irrigation diversions, correct fish passage barriers, and separate irrigation canals and the creek channel to prevent entrainment of fish.	<ul style="list-style-type: none"> • Fish passage 	Lower creek	Potential	None identified	Unincorporated County
Taneum Creek (4.2)	N/A	Investigate securing water rights to improve instream flows.	<ul style="list-style-type: none"> • Instream flow improvement 	Lower creek	Underway	Washington Water Trust, Trout Unlimited, Bureau of Reclamation	Unincorporated County
	N/A	Decommission and revegetate unused roads and improve remaining roads to reduce watershed impacts.	<ul style="list-style-type: none"> • Water quality improvement • Riparian vegetation restoration 	Entire watershed	Potential	None identified	Unincorporated County
	Large Wood Replenishment	Improve in-channel habitat through the addition of large wood to the creek.	<ul style="list-style-type: none"> • Instream habitat restoration 	Lower Taneum Creek	Under way	Mid-Columbia Regional Fisheries Enhancement Group	Unincorporated County
	N/A	Correct remaining fish passage barriers within the watershed.	<ul style="list-style-type: none"> • Fish passage 	Entire watershed	Potential	None identified	Unincorporated County
	N/A	Revegetate disturbed riparian areas, where possible.	<ul style="list-style-type: none"> • Riparian vegetation restoration 	Entire River	Potential	None identified	Unincorporated County
	Taneum floodplain and riparian restoration	Remove or setback linear hydromodification, reconnect side channels and restore riparian vegetation to improve floodplain functioning, where possible.	<ul style="list-style-type: none"> • Floodplain enhancement • Riparian vegetation restoration • Instream habitat restoration • Instream flows 	Entire creek	Proposed	Yakama Nation, Kittitas Conservation Trust, Mid-Columbia Regional Fisheries Enhancement Group, others	Unincorporated County
Wilson Creek (4.5)	N/A	Investigate re-establishing a natural stream channel (the creek was historically channelized) and revegetating the riparian corridor.	<ul style="list-style-type: none"> • Instream habitat restoration • Riparian vegetation restoration • Water quality improvement 	Entire creek	Potential	None identified	Unincorporated County

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
	N/A	Investigate the feasibility of stormwater treatment retrofits to improve runoff water quality from urban areas.	<ul style="list-style-type: none"> Water quality improvement 	Areas of Ellensburg that drain to Wilson Creek	Potential	None identified	Unincorporated County
	N/A	Install fish screens on irrigation diversions, correct fish passage barriers, and separate irrigation canals and the creek channel to prevent entrainment of fish.	<ul style="list-style-type: none"> Fish passage 	Lower creek	Potential	None identified	Unincorporated County
Yakima River (4.1)	N/A	Revegetate disturbed riparian areas, where practical.	<ul style="list-style-type: none"> Riparian vegetation restoration 	Entire Kittitas Valley- portion of the Yakima River	Potential	None identified	Unincorporated County, Ellensburg
	N/A	Investigate opportunities for floodplain reconnection and setting-back of hydromodifications.	<ul style="list-style-type: none"> Floodplain enhancement 	Entire Kittitas Valley- portion of the Yakima River	Potential	None identified	Unincorporated County, Ellensburg
	N/A	Explore restoration of former gravel pits to create more natural floodplain and riverine habitat.	<ul style="list-style-type: none"> Floodplain enhancement Instream habitat restoration Riparian vegetation restoration 	Historic gravel pits along river	Potential	None identified	Unincorporated County, Ellensburg
	Kittitas Reach Habitat Protection	Protect floodplain and channel migration zone of the mainstem Yakima River via acquisitions, easements and other conservation agreements	<ul style="list-style-type: none"> Habitat preservation 	Multiple	Underway	Kittitas County, Forterra, and others	Unincorporated County, Ellensburg
	Gladmar Pond	Central Washington University manages Gladmar Pond and the surrounding County-owned shorelines for use as an outdoor research facility for university students.	<ul style="list-style-type: none"> Research/education 	Gladmar Road	Under way	Central Washington University	Unincorporated County
	Hanson Pits	Proposed dike setback and habitat restoration along the Hansen pits, a former County gravel and borrow pit area.	<ul style="list-style-type: none"> Riparian vegetation restoration 	Canyon Road, south of Ellensburg	Proposed	City of Ellensburg and Kittitas County	Unincorporated County, Ellensburg
	N/A	Revegetate the disturbed floodplain area northwest of Irene Rinehart Park.	<ul style="list-style-type: none"> Riparian vegetation restoration 	Irene Rinehart Riverfront Park	Potential	None identified	Ellensburg

Table 3-3. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Yakima Canyon Area

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Yakima River (5.1)	Roza Dam removal	The Integrated Plan for the Yakima Basin proposes to construct a water storage facility within Lmuma Creek Canyon (the 'Wymer Project'), approximately 8 miles upstream of the Roza Diversion Dam. As part of the Project, the feasibility of removing Roza Dam will be evaluated.	<ul style="list-style-type: none">Fish passageInstream habitat restoration	Roza Dam	Potential	None identified	Unincorporated County
	Yakima River Canyon Land Acquisition	Several properties in the Yakima Canyon have been acquired to protect fish, wildlife and recreation values, and acquisitions are underway for additional properties. The Integrated Plan for the Yakima Basin proposes acquisition of an additional 15,000 acres in the Yakima River Canyon.	<ul style="list-style-type: none">Habitat preservation	Yakima River Canyon	Underway	WDFW, Forterra, Bureau of Reclamation, and Bureau of Land Management	Unincorporated County

Table 3-4. Matrix of Shoreline Restoration Opportunities: Little Naches River Basin

Stream/ Waterbody and Corresponding Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Little Naches River (5.2)	Road 1900 Relocation	Re-route a portion of Forest Service Road 1900 out of the river’s floodplain.	<ul style="list-style-type: none">Floodplain enhancement	Forest Service Road 1900	Proposed	U.S. Forest Service and Yakima Klickitat Fisheries Project	Unincorporated County
	N/A	Remove or setback linear hydromodification, reconnect side channels, install large woody debris and restore riparian vegetation to improve floodplain functioning, where possible.	<ul style="list-style-type: none">Floodplain enhancementInstream habitat restorationRiparian vegetation restoration	Opportunities are present throughout the river	Potential	USFS, Yakama Nation, others	Unincorporated County
	N/A	Decommission and revegetate unused roads and improve remaining roads to reduce watershed impacts.	<ul style="list-style-type: none">Water quality improvementRiparian vegetation restoration	Entire watershed	Potential	None identified	Unincorporated County
	N/A	Acquire land or easements from willing land owners to ensure protection of private lands in Little Naches watershed	<ul style="list-style-type: none">Habitat Protection	Entire watershed	Potential	None identified	Unincorporated County

Table 3-5. Matrix of Shoreline Restoration Opportunities: Yakima River Basin—Columbia River

Stream/ Waterbody and Correspondin g Section in the ICR (ESA, 2013)	Project Name	Project Summary	Major Restoration Components	Site Location	Status of Restoration Project	Sponsor Organization(s)	Project Location (Jurisdiction)
Columbia River (6.1)	N/A	Prevent and control invasive species infestation at boat launches.	<ul style="list-style-type: none">• Instream habitat restoration	Boat launch locations	Potential	N/A	Unincorporated County

Table 3-6. Matrix of Shoreline Restoration Opportunities: Programmatic Activities for all Streams and Waterbodies

Project Name	Project Summary	Major Restoration Components	Status of Restoration Project	Sponsor Organization(s)
Crack willow eradication	Remove exotic crack willow from riparian areas	<ul style="list-style-type: none">• Riparian vegetation restoration	Proposed	Kittitas County
Fish screening	Ensure all stream diversions are adequately screened to prevent entrainment of fish, and monitor existing screens for effectiveness.	<ul style="list-style-type: none">• Fish passage	Underway	WDFW, Bureau of Reclamation, and irrigators
Improve irrigation efficiencies	Ongoing work to improve the efficiency of water deliveries and on-farm water use	<ul style="list-style-type: none">• Instream flow improvement	Ongoing	KCCD, USDA, Irrigators, YRBWEP
Manage and protect beaver populations	Work with landowners and others to manage beavers in a manner that allows beaver activity to improve aquatic habitat while minimizing negative impacts on land users	<ul style="list-style-type: none">• Floodplain enhancement• Instream habitat restoration• Riparian vegetation restoration• Instream flow improvement	Underway	WDFW
Address Forest Health issues	Altered fire regimes in dry forests may result in catastrophic wildfires	<ul style="list-style-type: none">• Habitat protection	Potential	N/A

3.3 SMP Restoration Policies

The Final Draft SMPs identify policies and regulations for shoreline restoration as required by the shoreline guidelines. Restoration is an allowed use in all shoreline environment designations. The regulations governing restoration activities are intended to promote and facilitate implementation, monitoring, and tracking of restoration action in accordance with the following specific policies:

- 1) Restoration actions should improve shoreline ecological functions and processes as well as shoreline features and should promote sustainability of sensitive and/or regionally important plant, fish, and/or wildlife species and their habitats.
- 2) Restoration and enhancement of shorelines should be designed using principles of landscape and conservation ecology and should restore or enhance chemical, physical, and biological watershed processes that create and sustain shoreline habitat structures and functions.
- 3) Provide, where feasible and desirable, restoration of degraded shoreline areas.
- 4) Restoration should be used to complement and not take the place of the shoreline protection strategies required by this Program to achieve the greatest overall ecological benefit.
- 5) Consider opportunities to seek funding from state, federal, private and other sources to implement planned restoration, enhancement, and acquisition projects.
- 6) Develop processing guidelines that will streamline the review of restoration only projects.
- 7) Encourage public and private shoreline owners to promote the proliferation of native, noninvasive wildlife, fish and plants.
- 8) Ensure that provisions for long-term maintenance and monitoring of restoration sites are included in permitting approvals.
- 9) Support voluntary and cooperative restoration efforts between local, state, and federal public agencies, tribes, non-profit organizations, and landowners to improve shorelines with impaired ecological functions and/or processes.
- 10) Restoration projects should be coordinated with local public utility and conservation districts.
- 11) Coordinate with state resource agencies to develop educational materials which promote the maintenance and restoration of shoreline functions. Educational materials should provide resources for a variety of scenarios and trends occurring within the shoreline that is reflected in the inventory and analysis, such as: the

conversion of agricultural land to non-agricultural use, existing and ongoing agricultural uses, and existing or planned residential and commercial development.

- 12) Encourage the agricultural industry to continue to work closely with agencies, such as the Natural Resource Conservation Service and conservation districts, with expertise in agricultural practices and restoration to improve degraded shoreline functions.
- 13) Allow for the use of tax incentive programs, mitigation banking, restoration grants, land swaps, or other programs, as they are developed, to encourage restoration of shoreline ecological functions and to protect habitat for fish, wildlife and plants.
- 14) Pursue the development of a public benefit rating system that provides incentives for the restoration of the shoreline.

CHAPTER 4. IMPLEMENTING RESTORATION

As a long-range planning effort without dedicated funding, it is difficult to articulate a detailed strategy for accomplishing the goals of this restoration plan. Under the Shoreline Management Act, the County and its municipalities are required to review, and amend if necessary, their SMPs once every eight years. At the time of the next update, these jurisdictions are required to report progress towards meeting their restoration goals. However, there is no requirement or timeframe for specifically *implementing* the Restoration Plan.

There are a number of challenges when it comes to implementing this plan. Some of the key challenges are:

- Lack of funding: Designing, carrying out, and monitoring the success of restoration efforts can be expensive, particularly at larger (e.g., watershed or reach) scales. In general, funding for restoration is limited and competition for funds can be extensive.
- Landowner participation: Landowners in areas identified as priorities for restoration efforts may be unwilling or unable to participate in those efforts. Building support and trust among landowners takes time and requires resources.
- Project permitting: Obtaining necessary permits from local, state, and federal regulatory agencies can require substantial time and effort, especially for projects that involve in-water construction. Although encouraged and allowed by the Final Draft SMPs, many restoration projects may take a year or more to permit.

One way the County and its municipalities can leverage resources for restoration projects is to include measures such as vegetation enhancement or the addition of in-water habitat features with recreation improvements and/or public works projects. Another key strategy is to partner with other agencies and organizations on large or complex projects that have regional benefits.

A description of existing restoration programs, potential project partners, and funding sources is included below.

4.1 Existing Restoration Programs

This section describes recent and ongoing projects and programs to protect and restore aquatic resources in Kittitas County.

Yakima Tributary Access and Habitat Program (YTAHP)

The YTAHP provides assistance to landowners in restoring critical salmon habitat by implementing projects that protect, restore, and enhance riparian and floodplain habitat currently or historically used by salmon. Program objectives are to screen irrigation

diversions, remove manmade barriers (dams, culverts, etc.), restore fish passage, and enhance stream habitat. YTAHP partners include local conservation districts, state agencies, and the Yakama Nation.

Upcoming YTAHP projects include separating the Ellensburg Water Company canal from Coleman Creek and providing fish passage and screening at two irrigation diversions. (<http://www.scwrcd.org/ytahp.html>)

Manastash Creek Project

As a result of Manastash Creek being designated as critical habitat for Endangered Species Act listed Mid-Columbia Summer Steelhead, the KCCD has been working with landowners and irrigators along Manastash Creek to improve habitat conditions along the lower 6 miles of the creek. Past activities have included installation of fish screens at irrigation diversions, removal of fish passage barriers, and efforts to improve stream flow conditions (Herrera & WSE, 2012). There are three unscreened fish diversions and one large fish passage barrier remaining, which are slated for improvement.

The KCCD, along with Kittitas County and local landowners, recently developed a detailed study and analysis of the lower 13 miles of Manastash Creek (Herrera & WSE, 2012). In the next phase of the Manastash Project, potential project opportunities will be developed with the goal of preserving or improving habitat, and reducing flood and erosion risks in the Manastash Creek corridor. (<http://www.kccd.net/manastash.htm>)

Irrigation Efficiencies Program

The Irrigation Efficiencies Program is a technical and cost share assistance program approved by the State Legislature to promote on-farm water conservation activities. In Kittitas County, the program is administered by the KCCD. The program provides funding for irrigators to install more efficient irrigation systems (such as a pivot sprinkler systems), and the “saved water” is leased to the State and held in trust until the lease period expires. Irrigation efficiency projects have occurred along several County streams with irrigation diversions, including Wilson Creek, Manastash Creek, and the Teanaway River. (http://www.kccd.net/Irrigation_Efficiencies.htm)

Cle Elum Stormwater Project

The KCCD is currently working with the City of Cle Elum, through an Ecology grant, to assess stormwater sources, inventory existing facilities, educate landowners, install streamside revegetation projects and develop a stormwater demonstration project. (<http://www.kccd.net/Stormwater.html>)

Ellensburg Stormwater Plan

The City of Ellensburg recently updated their Stormwater Management Plan (Morrow, 2013), in compliance with the requirements of the Phase II NPDES municipal stormwater permit. Components of the plan include public outreach and education, illicit discharge

elimination, construction/post construction runoff controls, and “good housekeeping” for municipal operations.

(<http://www.ci.ellensburg.wa.us/index.aspx?NID=252>)

Yakima Basin Integrated Water Resource Management Plan

In 2009, the U.S. Bureau of Reclamation and Ecology brought representatives from the Yakama Nation, irrigation districts, environmental organization, and federal, state, county, and city governments together to form the Yakima River Basin Water Enhancement Working Group to help develop a consensus-based solution to the Basin’s water problems. The outcome was the development of the Yakima River Basin Integrated Water Resource Management Plan (Ecology and Reclamation, 2011). The plan includes the following elements:

- Fish passage
- Fish habitat enhancement
- Modifying existing structures and operations
- Surface storage
- Market-based reallocation
- Groundwater storage
- Enhanced water conservation

(<http://www.ecy.wa.gov/programs/wr/cwp/ybip.html>)

In June of 2013, the plan was approved by the Washington State Legislature. The Legislature approved over \$130 million in state funding to implement the plan. Ongoing implementation of this plan is coordinated by the Department of Ecology’s Office of Columbia River and the federal Bureau of Reclamation.

Yakima Basin Sockeye Reintroduction

The Yakama Nation, along with the U.S. Bureau of Reclamation and other partners, are working to restore fish passage to the storage reservoirs in the upper Yakima River Basin, with an initial emphasis on Lake Cle Elum. The Yakama Nation has transplanted adult sockeye into Lake Cle Elum since 2009; the transplanted fish were the first sockeye to spawn in the Yakima Basin in over 100 years. Design of permanent fish passage facilities is currently under way. (<http://host119.yakama.com/restore/projects/yakima-basin-sockeye-reintroduction>)

Yakima Klickitat Fisheries Project

The Yakama Nation, along with several partner organizations, is undertaking a variety of habitat restoration and supplementation/reintroduction projects in the Yakima Basin, as part of the Yakima Klickitat Fisheries Project. Project elements include:

- Reintroduction of species that have been largely extirpated from the basin (coho, sockeye, summer-run Chinook, and lamprey).
- Release of spring Chinook at Cle Elum, and monitoring and evaluating the impacts of these releases.
- Monitor and evaluate passage and survival bottlenecks for juvenile salmon.
- Habitat acquisition and restoration

(<http://www.ykfp.org/>)

4.2 Potential Partners and Funding Sources

A number of organizations are active in restoration activities and public education in Kittitas County, which often partner with local governments for aquatic resource restoration projects. In addition, a number of government agencies and organizations provide opportunities for grant funding for restoration and preservation projects.

Potential Partners and Sources of Technical Assistance

Kittitas County Conservation District (KCCD)

Anna Lael
District Manager
607 East Mountain View
Ellensburg, WA 98926
<http://www.kccd.net/>

The KCCD is one of the 45 local Conservation Districts within the State, which helps match local resource needs with technical financial resources to help landowners with conservation projects. The KCCD also works with local, state, and federal authorities to implement on-the-ground stewardship activities. The KCCD is currently partnered with Kittitas County on the Manastash Project, as described above.

Washington State Department of Ecology

Central Regional Office
15 West Yakima Avenue
Suite 200
Yakima, WA 98902
http://www.ecy.wa.gov/directory_cro.html

U.S. Department of Reclamation

Columbia-Cascades Area Office

1917 Marsh Road

Yakima, WA 98901

<http://www.usbr.gov/pn/>

Ecology and the U.S. Department of Reclamation are currently working to improve water management in the Yakima River Basin. The Yakima Basin Integrated Water Resource Management Plan (Reclamation and Ecology, 2011) contains a variety of proposed elements to protect, mitigate, and enhance fish and wildlife habitat. In June 2013, the plan was adopted and funded by the Washington State Legislature; approximately \$32 million was allocated to begin work on specific elements of the plan.

Forterra

Central Washington Office

409 North Pine Street

Ellensburg, WA 98926

<http://www.forterra.org/>

Kittitas Conservation Trust

205 Alaska Avenue

P.O. Box 428

Roslyn, WA 98941

<http://kittitasconservationtrust.org/>

Forterra and the Kittitas Conservation Trust are land conservancy organizations that are active within the County. The primary goals of these organizations are to conserve and protect high-quality habitats and working agricultural lands.

Washington Water Trust

103 E 4th Ave

Suite 203

Ellensburg, WA 98926

The Washington Water Trust is a non-profit organization with the goal of improving and protecting stream flows and water quality throughout Washington State. The trust relies on voluntary, market-based transactions and cooperative partnerships to conserve water, such as leasing and buying water from water rights holders, and working with other organizations, such as the KCCD, to promote more efficient irrigation methods and technologies.

Mid-Columbia Fisheries Enhancement Group

Rebecca Wassell

Yakima Basin Program Manager

P.O. Box 2211

White Salmon, WA 98672

<http://midcolumbiarfeg.com/>

The Mid-Columbia Fisheries Enhancement Group works with landowners and community partners to protect and restore fish habitat. The group is one of the 14 Regional Fisheries Enhancement Groups in Washington State.

Yakama Nation Fisheries

401 Fort Road

PO Box 151

Toppenish, WA 98948

<http://host119.yakama.com/>

Yakama Nation Fisheries is dedicated to restoring culturally important fish runs in the Columbia River Basin. The Yakama Nation is active in projects to restore the historic salmon, steelhead, and lamprey runs in the Yakima River Basin.

Yakima Basin Fish and Wildlife Recovery Board (YBFWRB)

1200 Chesterly Drive, Suite 280

Yakima, WA 98908

(509) 453-4104 www.ybfwrb.org

YBFWRB's mission is to restore sustainable and harvestable populations of salmon, steelhead, bull trout and other at-risk fish and wildlife species through collaborative, economically sensitive efforts, combined resources, and wise resource management of the Yakima River Basin. The Board:

- 1) Coordinates funding for fish and wildlife restoration projects in the Yakima Basin;
- 2) Developments strategic plans to guide fish and wildlife recovery efforts in the Yakima Basin;
- 3) Supports efforts to implement priorities identified in its strategic plans; and
- 4) Foster public awareness and engagement in fish and wildlife recovery issues.

Recent restoration plans produced by the YBFWRB include:

- Yakima Steelhead Recovery Plan (2009)
- Yakima Bull Trout Action Plan (2012)
- Yakima Basin Habitat Restoration Projects (2013)

Potential Funding Sources

Environmental Protection Agency

Region 10: Pacific Northwest

Grants Administration Unit

Bob Phillips

phillips.bob@epa.gov

(206) 553-6367

<http://www.epa.gov/epahome/grants.htm>

The Environmental Protection Agency funds a variety of projects that aim to safeguard the natural environment and protect human health. Potential opportunities specific to watershed protection and restoration are listed below.

The Clean Water State Revolving Fund Program: Under this program, EPA provides grants or “seed money” to all 50 states plus Puerto Rico to capitalize state loan funds. The states, in turn, make loans to communities, individuals, and others for high-priority water-quality activities. Types of projects funded include protecting and restoring wetlands and riparian buffers.

Nonpoint Source Implementation Grant (319) Program: Clean Water Act Section 319(h) funds are provided only to designated state and tribal agencies to implement their approved nonpoint source management programs. State and tribal nonpoint source programs have a variety of components such as technical assistance, financial assistance, education, training, demonstration projects, and technology transfer. Each year, EPA awards Section 319(h) funds to states in accordance with an allocation formula that EPA has developed.

Wetland Protection, Restoration, and Stewardship Discretionary Funding: This program provides support for studies and activities related to implementation of Section 404 of the Clean Water Act for both wetlands and sediment management. Projects can support regulatory, planning, restoration or outreach issues. Typical grant awards range from \$5,000 to \$20,000.

Environmental Education Grants: This program funds a broad variety of environmental education, training, and outreach activities. Grant awards of up to \$50,000 are provided to universities, state, local, and tribal education agencies, and nonprofit organizations.

U.S. Fish & Wildlife Service (USFWS)

911 NE 11th Avenue

Portland, OR 97232-4181

(503) 231-2014

<http://www.fws.gov/grants/>

Grant programs administered by USFWS are described below.

- *Partners for Fish and Wildlife Program*: This program provides technical and financial assistance to private landowners and tribes who are willing to work with USFWS and other partners on a voluntary basis to help meet the habitat needs of Federal Trust Species. The Partners Program can assist with projects in all habitat types which conserve or restore native vegetation, hydrology, and soils associated with imperiled ecosystems such as longleaf pine, bottomland hardwoods, tropical forests, native prairies, marshes, rivers and streams, or ecosystems that otherwise provide an important habitat requisite for a rare, declining or protected species. The typical grant award is approximately \$25,000.
- *National Fish Passage Program*: Each year the Service solicits and inputs select fish passage projects into the Fisheries Operational Needs System database. Projects are prioritized and selected based upon the benefits to species and the geographical area. Typical projects include barrier culvert removal or replacement with a fish passable culvert or bridge, and re-opening oxbow and off channel habitats. Typical funding amounts range from \$30,000 to \$110,000 with a minimum 25% cost share requested.
- *Cooperative Endangered Species Conservation Fund*: Grants offered through the Cooperative Endangered Species Conservation Fund support participation in a wide array of voluntary conservation projects for candidate, proposed and listed species. These funds may in turn be awarded to private landowners and groups for conservation projects.
- *North American Wetlands Conservation Act Grants Program*: The North American Wetlands Conservation Act of 1989 provides matching grants to organizations and individuals who have developed partnerships to carry out wetlands conservation projects in the United States, Canada, and Mexico for the benefit of wetlands-associated migratory birds and other wildlife. The Standard Grants Program supports projects in Canada, the United States, and Mexico that involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitats. The Small Grants Program operates only in the United States; it supports the same type of projects and adheres to the same selection criteria and administrative guidelines as the U.S. Standard Grants Program. However, project activities are usually smaller in scope and involve fewer project dollars. Grant requests may not exceed \$75,000, and funding priority is given to grantees or partners new to the Act's Grants Program.

Washington State Department of Ecology

P.O. Box 47600

Olympia, Washington 98504-7600

360-407-6300

<http://www.ecy.wa.gov/fap.html>

Ecology's Water Quality Program administers four major funding programs that provide low-interest loans and grants for projects that protect and improve water quality in Washington State. Ecology acts in partnership with state agencies, local governments, and tribes by providing financial and administrative support for their water quality efforts. As much as possible, Ecology manages the four programs as one; there is one funding cycle, application form, and offer list. The four programs are: The Centennial Clean Water Program, The Water Pollution Control Revolving Fund, The Clean Water Section 319 Program, and Stormwater Retrofit and Low Impact Development Grant Program. Local governments, tribes, conservation districts, and non-profit groups are eligible for funding. Grants and loans are available for point source and nonpoint source projects, for example, treatment facilities, stormwater control and treatment, stream restoration and protection, and on-site septic repair and replacement.

Washington State Department of Transportation**South Central Region**

2809 Rudkin Road

Union Gap, WA 98903

<http://www.wsdot.wa.gov/regions/SouthCentral/>

The Washington State Department of Transportation (WSDOT) has an ongoing program to remove barriers to fish passage (e.g., culverts), and also works with WDFW to identify wildlife corridors across highway corridors. Also, transportation infrastructure development and maintenance activities can result in unavoidable impacts to shoreline habitats and resources, which requires compensatory mitigation in the form of habitat restoration. Local communities and other organizations can work with WSDOT to make sure that the department's mitigation obligations are focused on high-priority restoration activities. For example, for the I-90 Snoqualmie Pass East project, WSDOT has formed partnerships with a variety of government agencies, tribes, universities, and conservation organizations to perform wildlife monitoring activities and identify mitigation sites.

National Fish and Wildlife Foundation

1120 Connecticut Avenue, NW, #900

Washington, DC 20036

Kathleen Pickering

202-857-0166

<http://www.nfwf.org/AM/Template.cfm?Section=GrantPrograms>

Non-profit organizations, local, state or federal government agencies are eligible to apply for funds for community-based projects that improve and restore native salmon habitat, remove barriers to fish passage, or for the acquisition of land/ conservation easements on

private lands where the habitat is critical to salmon species. The National Fish and Wildlife Foundation's primary grant program, The Five-Star Restoration Program, provides modest financial assistance on a competitive basis to support community-based wetland, riparian and coastal habitat restoration projects that build diverse partnerships and foster local natural resource stewardship through education, outreach and training activities.

Washington State Recreation and Conservation Office (RCO)

1111 Washington St. SE

PO Box 40917

Olympia, WA 98504

360-902-3000

<http://www.rco.wa.gov/grants/index.shtml>

The RCO (formerly Interagency for Outdoor Recreation [IAC]) supports the work of several organizations such as the *Recreation and Conservation Funding Board* and the *Salmon Recovery Funding Board*.

The Recreation and Conservation Funding Board provides funds for the acquisition and development of recreation and conservation lands. The board distributes funds through eight grant programs, for instance:

- *Land and Water Conservation Fund*: This program provides funding to preserve and develop outdoor recreation resources, such as parks, trails, and wildlife lands.
- *Washington Wildlife Recreation Program*: The Washington Wildlife Recreation Program Account involves support for critical habitat, natural areas, urban wildlife, local parks, state parks, trails, and water access categories.
- *Aquatic Lands Enhancement Account*: This program funds acquisition, restoration, and public access projects that benefit wildlife habitat and aquatic conservation in waterfront areas.

The Recreation and Conservation Funding Board's grant process is open and competitive. Applications are submitted annually for some grant programs and every two years for others. The grant applications are reviewed by board staff and citizen committees. Letters of intent are usually due March 1. Applications are usually due May 1.

The Salmon Recovery Funding Board (SRFB) supports salmon recovery by funding habitat protection and restoration projects. It also supports related programs and activities that produce sustainable and measurable benefits for fish and their habitat. Salmon Recovery Grants can be used for buying salmon habitat, restoring areas along streams and other waterways, replacing barriers to fish passage, and creating fish habitat. The grants from SRFB range from \$10,000 to nearly \$900,000. They have been awarded to organizations in 28 counties for work ranging from planting trees along streams to cool the water for salmon, to replacing culverts that prevent salmon from migrating to spawning habitat, to restoring entire floodplains.

All applicants for SRFB must apply through their local Lead Entity (for the Yakima Basin, this is the Yakima Basin Fish and Wildlife Recovery Board). The Lead Entity is responsible for soliciting applications and completing a local technical and citizens review that results in a ranked project list submitted to the SRFB for consideration for funding. The SRFB then completes a statewide review of submitted projects and makes the final funding determination.

Depending on the grant program, eligible applicants may include municipal subdivisions (cities, towns, counties, and special districts such as port, conservation, utility, park and recreation, and school), tribal governments, state agencies, nonprofit organizations, regional fisheries enhancement groups, and private landowners. To be considered for funding, acquisition projects must be operated and maintained in perpetuity for the purposes for which funding is sought. Restoration projects must be operated and maintained for ten years after construction is completed. All projects require lead entity approval and must address the goals and actions defined in the lead entity strategy or regional recovery plan.

Grants are awarded by the SRFB based on a public, competitive process that weighs the merits of proposed projects against established program criteria.

**Trout Unlimited
Embrace-A-Stream**

406-543-1192

<http://www.tu.org/conservation/watershed-restoration-home-rivers-initiative/embrace-a-stream>

Embrace-A-Stream (EAS) is the flagship grant program for funding Trout Unlimited's conservation efforts to conserve, protect, and restore coldwater fisheries and their watersheds. Trout Unlimited annually raises money from members, corporate and agency partners, and foundations to distribute as small grants to local Trout Unlimited projects. The goal of EAS is to conserve coldwater fisheries through innovative grassroots conservation projects. Successful projects are based on sound science, benefit the resource, strengthen the local Trout Unlimited chapter and council, and help build the constituency for protecting trout and salmon. Trout Unlimited volunteers are actively involved in project work and are expected to provide matching funds. An Embrace-A-Stream Committee comprised of Trout Unlimited volunteer representatives and scientific advisors evaluates all proposed projects.

**United States Department of Agriculture
Conservation Reserve Program**

316 West Boone Avenue
Suite 568

Spokane, WA 99210

<http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp>

The Conservation Reserve Program (CRP) provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with federal, state, and tribal environmental laws, and encourages environmental enhancement. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Farmers receive an annual rental payment for the term of the multi-year contract. Cost sharing is provided to establish the vegetative cover practices.

Kittitas County Flood Control Zone District (FCZD)

Kirk Holmes

Director of Public Works

411 North Ruby Street

Suite 1

Ellensburg, WA 98926

<http://www.co.kittitas.wa.us/public-works/flood/flood-control-zone-district.aspx>

The County recently formed the FCZD, which is funded through property taxes. The collected funds will be used to fund flood-related projects and programs within the County. While the primary intent of the FCZD is to fund projects that protect County roads and infrastructure, there may be potential for flood control projects that also enhance shoreline resources.

4.3 Timelines, Benchmarks, and Measuring Effectiveness

As a long-range program, it is important to establish meaningful timelines and measureable benchmarks in the SMPs by which to evaluate the effectiveness of restoration planning or actions. As stated above, the County and its municipalities are required to report progress towards meeting their restoration goals at the time of the next SMP update (likely to occur in approximately 2022). A future review should include:

- Summarizing both planning efforts (including application for and securing grant funds) and on-the-ground actions undertaken in the interim to meet adopted restoration goals, objectives, and policies; and
- Revising, as necessary, the SMP restoration planning policies to reflect changes in priorities or objectives.

The SMP guidelines state that local governments should monitor shoreline conditions and SMP performance over time to inform future updates of SMP provisions (WAC 173-26-201[2][b]). Ideally, measuring the effectiveness of this restoration plan should occur in concert with the overall requirement to monitor SMP performance to assess if no net loss of shoreline functions is being obtained.

In order to document existing shoreline functions and track changes that occur over time, a set of measurable “indicators” is needed. Changes in these indicators can be compared to baseline conditions (as documented in the Shoreline Inventory and Characterization Report [ESA, 2013]) to estimate if ecological functions are increasing, decreasing, or remaining the same. The set of indicators must be specific enough to be tallied in a reliable and systemic way, using available data from existing sources. Table 4-1 contains a set of suggested indicators that could be used to assess the ecological functions of County shorelines over time.

Table 4-1. Suggested indicators of ecological function that can be systematically tallied using existing data for Kittitas County.

Ecological Function Indicator	Why Selected?
Riparian vegetation (area)	Riparian vegetation has a major influence on stream and lake health. It provides habitat for wildlife, stabilizes streambanks, provides a source of large woody debris and organic matter, and provides shade to lower water temperatures.
Wetlands (area)	Wetlands perform valuable functions, such as water quality improvement, floodwater storage, groundwater recharge, and habitat.
Impervious surfaces (area)	Impervious surfaces adversely reduce infiltration which can impact groundwater recharge, stream baseflows, instream fauna, and other functions.
Shoreline armoring (linear feet)	Armoring affect the movement of materials and organisms between the riparian and the aquatic zone and alters natural drainage patterns.
Levees/dikes (linear feet)	Levees and dikes disconnect streams from their floodplains, which can impact channel migration and sediment supply and transport processes. These structures can also result in a loss of riparian vegetation and fish habitat, as well as floodwater storage.
Floodplain development (area)	Impairments similar to that for levees/dikes.
Docks and piers (water coverage area and number of structures)	Construction of docks and piers shade the water, which can result in loss of aquatic vegetation and simplification of food webs.

For example, if there is an increase in the amount and length of levees in the County over time, it can be estimated that a net loss of floodplain functions has occurred. Conversely, if restoration efforts result in levee set-backs or removal, it can be inferred that floodplain functions are improving.

A potential option to track changes in shoreline conditions would be to create a checklist for all use and development proposals (including permit-exempt uses and developments) within shoreline jurisdiction. The checklist could contain review questions to help identify and track changes in environmental indicators. The checklist could also be used to track restoration activities for individual restoration projects. An example checklist is presented in Appendix A.

Based upon the compiled results of the shoreline development checklists, the County and its municipalities could assess SMP performance and restoration objectives in the future. Those ecological processes and functions that demonstrate a downward trend of impairment could be elevated for priority action to prevent loss of critical shoreline resources. Alternatively, successful restoration may reduce the importance of some restoration objectives in the future.

Another option for tracking restoration progress and SMP performance over time would be for the County and its municipalities to partner with a conservation organization involved with restoration planning and fish and wildlife recovery within the County, such as the YBFWRB. Several conservation organizations already have existing monitoring programs and protocols, and may be interested in studying the relationship between shoreline development and restoration at a basin scale. Such a partnership would help the County assess SMP performance prior to the next mandated SMP update, as well as provide valuable scientific data for the partner conservation organization.

4.3.1 Restoration Timelines

In Kittitas County, shoreline restoration continues to be a collaborative process. The County intends to adhere as closely as possible to the timelines described below, depending on interdepartmental coordination, partnerships, and the availability of staff and grant funding. Given that Ellensburg, Cle Elum, and South Cle Elum have limited shoreline areas within their jurisdiction limits, and that all jurisdictions are located along the Yakima River, it is recommended that the County and its municipalities partner together to achieve the following restoration planning goals.

Within 2 years of adoption of this plan:

- Coordinate with organizations dedicated to restoration, such as the KCCD and Ecology, to schedule and explore funding options and partnerships to pursue restoration plan implementation.

Within 5 years of adoption of this plan:

- Implement at least one of the identified restoration projects.
- Prepare a progress report on restoration plan implementation.
- Update this restoration plan.³

³ This restoration plan should be periodically updated to address future completion of restoration projects, along with identification of additional restoration projects and goals. However, any changes to this plan will not be reflected in the formal Ecology document, unless a state-approved SMP amendment is obtained.

Within 7 years of adoption of this plan:

- Continue to identify and implement one (or more) additional restoration projects.
- Continue to explore funding options and partnerships.

CHAPTER 5. REFERENCES

- ESA. 2013. Kittitas County Regional Shoreline Master Program Update—Shoreline Inventory and Characterization Report (Revised Final). Prepared for: Kittitas County Communication Development Services, City of Cle Elum Department of Community Development, Town of South Cle Elum, and City of Ellensburg Department of Community Development.
- Herrera (Herrera Environmental Consultants, Inc.) and WSE (Watershed Science & Engineering, Inc.). 2012. Watershed and Reach Scale Investigation of Existing Conditions: Manastash Creek Corridor Habitat Enhancement and Flood Hazard Reduction Plan. Prepared for: Kittitas County Conservation District.
- Morrow, J. 2013. City of Ellensburg Stormwater Management Plan Update.
- Reclamation and Ecology (U.S. Bureau of Reclamation and Washington State Department of Ecology. 2011. Yakima River Basin Study: Proposed Integrated Water Resource Management Plan (Ecology Publication #11-12-004). Yakima, WA.

APPENDIX A. EXAMPLE SHORELINE DEVELOPMENT CHECKLIST

Shoreline Development Checklist

Checklist Purpose

The purpose of this checklist is to identify and track the implications of a shoreline use/development on the ecological functions and processes in accordance with the SMP. The checklist applies to all use/development proposals within shoreline jurisdiction, regardless of whether a shoreline permit is required.

Date _____ Permit # _____

Landowner Information

Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____

E-Mail: _____

Type of Ownership:

☐ Federal

☐ Local

☐ Private

☐ State

☐ Tribal

Applicant or Agent Information (if different than landowner)

Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____

E-Mail: _____

Project Information

Project Name: _____

Project Location/Street Address: _____

State: _____ Zip Code: _____

Tax Parcel Number(s): _____

Shoreline Information:

Name of adjacent waterbody: _____

Name of shoreline reach (from Inventory and Characterization Report): _____

Shoreline Environment Designation: _____

Type of shoreline: ☐ Riverine ☐ Lake

What type of shoreline approval does the project require?

☐ Shoreline exemption

☐ Substantial development permit

☐ Conditional use permit

☐ Variance

Project Description

Briefly summarize the purpose of the project:

What is the primary use of the project (e.g. Residential, Commercial, Public, Recreation)?

What is the specific use of the project (e.g. single family home, subdivision, boat launch, restoration project)?

Vegetation

Will the project result in clearing of tree or shrub canopy?

☐ Yes

☐ No

If 'Yes', how much clearing will occur? (square feet/acres)

Will the project result in revegetation of tree or shrub canopy?

☐ Yes

☐ No

If 'Yes', how much revegetation will occur? (square feet/acres)

Wetlands

Will the project result in wetland impacts?

☐ Yes

☐ No

If 'Yes', how much wetland will be permanently impacted? (square feet and acres)

Will the project result in wetland restoration?

☐ Yes

☐ No

If 'Yes', how much wetland will be restored? (square feet and acres)

Impervious Surfaces

Will the project result in over 500 feet of creation of impervious surfaces?

☐ Yes

☐ No

If 'Yes', how much impervious surface will be created? (square feet and acres)

Will the project result in removal of impervious surfaces?

☐ Yes

☐ No

If 'Yes', how much impervious surface will be removed? (square feet and acres)

Shoreline Stabilization

Will the project result in creation of structural shoreline stabilization structures (revetment/bulkhead/riprap)?

☐ Yes

☐ No

If 'Yes', what is the net linear feet of stabilization structures that will be created? _____

Will the project result in removal of structural shoreline stabilization structures (revetment/bulkhead/riprap)?

☐ Yes

☐ No

What is the net linear feet of stabilization structures that will be removed? _____

Levees/Dikes

Will the project result in creation, removal, or relocation (setting back) of levees/dikes?

☐ Yes

☐ No

If 'Yes', what is the net linear feet of levees/dikes that will be created? _____

If 'Yes', what is the net linear feet of levees/dikes that will be permanently removed? _____

If 'Yes', what is the linear feet of levees/dikes that will be reconstructed at a location further from the OHWM? _____

Floodplain Development

Will the project result in development within the regulatory floodplain?

☐ Yes

☐ No

If 'Yes', what is the net square feet of structures to be constructed in the floodplain? _____

Will the project result in removal of existing structures within the floodplain?

☐ Yes

☐ No

If 'Yes', what is the net square footage of structures to be removed from the floodplain? _____

Overwater Structures

Will the project result in construction of an overwater dock, pier, or float?

☐ Yes

☐ No

If 'Yes', how many overwater structures will be constructed? _____

What is the net square footage of water-shading surfaces that will be created? _____

Will the project result in removal of an overwater dock, pier, or float?

☐ Yes

☐ No

If 'Yes', how many overwater structures will be removed? _____

What is the net square footage of water-shading surfaces that will be removed? _____

Summary / Conclusion

Provide any additional information needed to verify the project's impacts to shoreline ecological functions (attach additional sheets and relevant reports as necessary):
